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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,401

06/08/2007

Uwe Skultety-Betz

10191/4512

8231

26646 7590 07/22/2009
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EXAMINER

BYTHROW, PETER M

ART UNIT

PAPER NUMBER

3662

MAIL DATE

DELIVERY MODE

07/22/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,401	Applicant(s) SKULTETY-BETZ ET AL.	
	Examiner Peter M. Bythrow	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 18 and 20-37 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claim 18** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 18, as amended, recites "wherein a distance sensor is adapted to determine a distance traveled by the radar device as a function of a distance of movement of the radar device." The claim appears to be stating a functional operation of the distance sensor in that it "determine[s] a distance traveled by the radar device as a function of a distance of movement of the radar device". The relevant portion of the specification, page 5 lines 15-21, states:

"If the device has a distance sensor system, it is possible not only to measure the instantaneous signal levels of the different sensors, but also to detect and display signal curves. This makes possible a two-dimensional representation in the display of the instrument, which shows not only the distance information but also the depth information. This advantageously differs from the metal location-determining devices of the related art, in which the instantaneous measurement result at the measurement site is usually displayed via one or more optical signal lights."

In an effort to distinguish the invention from prior art, applicant contends that the present invention allows "a two-dimensional representation in the display of the instrument, which shows not only the distance information but also the depth". However, this does not further illustrate the operation or underlying functionality of the distance sensor, and certainly does not disclose the functionality of "a distance sensor is adapted to determine a distance traveled by the radar device as a function of a distance of movement of the radar device", and therefore the limitation would be considered new matter.

3 The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 18, as amended, recites "wherein a distance sensor is adapted to determine a distance traveled by the radar device as a function of a distance of movement of the radar device." This limitation appears to be a trivial statement, equating to "a distance traveled is determined based upon the distance traveled." The specification, specifically page 5 lines 15-21, does not further illuminate the intention or underlying function of this limitation beyond having a sensor which determines a distance traveled by the radar device. As such, the claim is vague and indefinite.

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4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 18-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wollny (US 5680048) in view of Doerksen ("Improved Optical Positioning for GPR Based Structure Mapping", Ninth International Conference on Ground Penetrating Radar, Proceedings of SPIE Vol. 4758 (2002), pp. 503-507) .

As to Claims 18 and 28, Wollny discloses a radar device having a radar sensor that generates a first detection signal for penetrating a medium to be tested in such a way that information about an object enclosed in the medium can be obtained by measuring and analyzing a reflected detection signal of the radar sensor (column 1 lines 43-47), and an additional sensor for generating a second detection signal for obtaining information about the object enclosed in the medium (column 1 lines 65-67 and column 2 lines 1-3). Wollny does not disclose a displacement sensor detecting signal characteristics of the sensors.

Doerksen discloses a hand held Ground Penetrating Radar device (abstract) having a displacement sensor for determining the two-dimensional position of the GPR device as it is moved (page 503 column 2 first full paragraph). The use of positioning systems in GPR devices for determining the two-dimensional location of the GPR device is well known in the art. It would have been obvious to modify Wollny, such that the radar device incorporated a displacement sensor, as taught by Doerksen, in order to

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precisely determine the location of the radar device and objects of interest enclosed in the medium.

As to Claim 20, Wollny discloses the additional sensor being an inductive sensor (column 2 lines 22-25).

As to Claims 21, 22, 30, and 31, capacitive sensors for detecting objects enclosed in a medium are well known in the art. It would have been obvious to modify Wollny in view of Doerksen, such that the additional sensor was a capacitive sensor, as it would cause no new or unexpected results.

As to Claims 23 and 24, infrared sensors for detecting objects enclosed in a medium are well known in the art. It would have been obvious to modify Wollny in view of Doerksen, such that the additional sensor was an infrared sensor, as it would cause no new or unexpected results.

As to Claim 25, Wollny discloses a housing in to which the radar sensor and the additional sensor are integrated (column 2 lines 1-3).

As to Claim 26, Wollny discloses the radiating elements being situated on a printed circuit board, but does not explicitly disclose the radar sensors and the additional sensor being both situated on the printed circuit board. However, manufacture of sensor components on printed circuit boards is well known within the art. It would have been obvious to modify Wollny in view of Doerksen such that both the radar sensor and the additional sensor were situated on the same printed circuit board as it would cause no new or unexpected results.

As to Claim 27, Wollny discloses the radar sensor being advantageously implemented over a multitude of frequency bands (column 5 lines 29-40). Though Wollny in view of Doerksen does not explicitly disclose the radar sensor being of the wideband pulse variety, wide band pulse radar sensors are well known in the art. It would have been obvious to modify Wollny in view of Doerksen such that the radar sensor was a wide band pulse radar sensor as it would cause no new or unexpected results.

As to Claim 29, Wollny discloses receiving reflected radar signals for analysis (column 2 lines 49-57). It is inherent in the operation of this type of radar system that objects be detected by transmitting a radar signal and carrying out analysis on the reflected radar signal in order to measure an object.

As to Claim 32, Wollny discloses the additional sensor being an inductive sensor and generating an additional detection signal (column 2 lines 22-25).

As to Claim 33-35, Wollny in view of Doerksen does not explicitly disclose the time operating parameters for measurement of the first detection signal and the second detection signal. However, time operating parameters for measurement of signals simultaneously, quasi-simultaneously, and sequentially are well known, and would be obvious to try, as they would cause no new or unexpected results

As to Claim 36, Wollny discloses measuring and analyzing a plurality of detection signals (column 1 lines 65-67 and column 2 line 1), the sensors originating from a group of sensors including an inductive sensor (column 2 lines 22-25).

As to Claim 37, Wollny discloses the detection signal of a sensor being optimized by measuring and analyzing an additional detection signal (column 3 lines 33-36).

Response to Amendment

6. Applicant's arguments, filed 06/25/2009, with respect to the rejection of claims 18 and 28 under 35 U.S.C §112 first paragraph have been fully considered and are persuasive. The rejections of claims 18 and 28 have been withdrawn.

Response to Arguments

7. Applicant's arguments filed 06/25/2009 have been fully considered but they are not persuasive.

8. On page 6 of the Applicant's remarks, Applicant argues that, with regards to claim 18, the combination of Wollny with Doerksen does not teach all of the limitations of the claimed invention. Applicant contends that:

"According to Doerksen, x, y position is calculated "by comparing successive frames of video taken from a camera pointed at the surface, correlating them spatially, and interpolating the distance that the sensor moved. Absolute position is calculated by compensating for the offset between the position sensor and the antenna, and then referencing the relative position to waypoints at known locations to eliminate instrument drift and transform into real world co-ordinates." (Doerksen, page 503, column 2, first full paragraph). Thus, according to Doerksen, the measurement of the distance traveled is not a function of the distance that the device moves, as is the case in the present claim, but rather, is a function of several other factors, including, comparing successive frames

of video taken from a camera pointed at the surface, correlating them spatially, interpolating the distance that the sensor moved, compensating for the offset between the position sensor and the antenna, and then referencing the relative position to waypoints at known locations to eliminate instrument drift and transform”.

The examiner respectfully disagrees with the Applicant’s argument. The limitations of claim 18 provide only for a radar device “wherein a distance sensor is adapted to determine a distance traveled by the radar device as a function of a distance of movement of the radar device”. The invention of Doerksen clearly provides such a device. Though Doerksen determines the distance traveled by the radar device by means of comparing successive video frames taken from a camera [mounted on the device (figure 1)] pointed at the surface, correlating them spatially, and finally interpolating the distance, the ability of this device to determine “a distance traveled by the radar device” is entirely contingent upon a distance of movement of the radar device. Figures 2-6 demonstrate the function of the distance sensor, adapted to determine a distance traveled by the device as a function of the distance of movement of the radar device. With no such “distance of movement of the radar device”, the invention of Doerksen would not report a distance traveled by the radar device.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter M. Bythrow whose telephone number is (571)270-1468. The examiner can normally be reached on Mon-Fri, 8AM-5:30PM, Alt Fri, EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas H. Tarcza can be reached on 571-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Peter M. Bythrow
Examiner, Art Unit 3662

/Thomas H. Tarcza/

Supervisory Patent Examiner, Art Unit 3662